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Curvature coupling and accelerated expansion of the universe

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Abstract

A new exactly solvable model for the evolution of a relativistic kinetic system interacting with an internal stochastic reservoir under the influence of a gravitational background expansion is established. This model of self-interaction is based on the relativistic kinetic equation for the distribution function defined in the extended phase space. The supplementary degree of freedom is described by the scalar stochastic variable (Langevin source), which is considered to be the constructive element of the effective one-particle force. The expansion of the Universe is shown to be accelerated for the suitable choice of the non-minimal self-interaction force.

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Keywords

Cosmology, Gravitation, Stochastic source